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ABSTRACT

This issue continues the Indiana Historical Bureau's collaboration with the Division of Historic Preservation and Archaeology, Indiana Department of Natural Resources. The articles include "The Science of Archaeology," chronicling the remarkable transformation of the science of archaeology to date; "Archaeology in Indiana," providing a brief overview of the development of archaeology in Indiana over the past 60 years; "Cultural Chronology in Indiana," presenting a timeline of cultures in Indiana spanning 12,000 years; and "Why and Where To Begin (Phases 1-3)," demonstrating the various steps of professional archaeological surveying and excavation, using both pre-contact and historical examples. Lists information for adults and students who are interested in learning about and participating in Indiana archaeology. Identifies legal duties and responsibilities required of both the Division of Historic Preservation and Archaeology and the public, including realtors, developers, and construction managers. Highlights Angel Mounds State Historic Site (Evansville, Indiana). Includes a bibliography, additional resources, resources for educators, and student resources. (BT)

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P. L. Bennett

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Archaeology

in Indiana—the Science Today

The Indiana Historian *A Magazine Exploring Indiana History*

INDIANA HISTORIC SITES AND STRUCTURES INVENTORY - ARCHAEOLOGICAL SITES

State Form 24402 (R/10-94)

1.State site number

SITE NA

3.Site name

5.Other names and numbers

6.Project nar

14.Addition

15.Lot num

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Focus

Front cover illustrations: from top to bottom—a portion of an official archaeological site form, an excavated archaeological unit showing the limestone foundation of a French-Canadian fur trader's cabin (photograph by James R. Jones III), archaeologists screening soil for artifacts (photograph courtesy Kim Tinkham), and a Late Middle Woodland complicated stamped sherd from the collection of the Glenn A. Black Laboratory of Archaeology, Indiana University (photograph by Richard Fields for *Outdoor Indiana*).

This issue continues the Indiana Historical Bureau's collaboration with the Division of Historic Preservation and Archaeology, Indiana Department of Natural Resources. Its staff members have provided both information and images for this issue. James R. Jones III and Amy Johnson served as guest editors. Nikki Waters, Kimberly Tinkham, and James Mohow also contributed.

Below is listed information about the many avenues available to people, both adults and students, who are interested in learning about and participating in Indiana archaeology.

Page 3 brings the remarkable transformation of the science of archaeology up to date.

Page 4 provides a brief overview of the development of archaeology in Indiana over the past sixty years.

Page 5 provides in chart form a timeline of cultures in Indiana beginning 12,000 years ago and concluding with the European migration to America.

Pages 6 through 13 demonstrate the various steps of professional archaeological surveying and excavation using both pre-contact and historical examples.

Page 14 highlights some of the legal duties and responsibilities required of both the Division of Historic Preservation and Archaeology and the public, including realtors, developers, and construction managers.

We have again chosen the second ink color to match a soil color—10YR, 7/8—from the *Munsell Soil Color Charts* (rev. ed., New York, 1992).

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The Indiana Historian provides resources and models for the study of local history to encourage Indiana's citizens of all ages to become engaged with the history of their communities and the state of Indiana.

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You be the archaeologist

• Have you ever wondered what it would be like to go on a dig and help recover valuable information and artifacts?

For those who are interested in preserving information about Indiana's rapidly disappearing archaeological resources, there are many ways to become involved.

• Become familiar with those in the archaeological community who can help.

Did you know that Indiana has a State Archaeologist, and there are other professional archaeologists who work for the state and federal governments and universities?

• Contact an avocational archaeological group in our state.

These groups advocate the wise collecting of artifacts, proper recording of sites, and the study of cultures in Indiana. They often help professionals by adding to our knowledge of Indiana's archaeological resources.

• Volunteer to work on a professional excavation, or dig.

Contact the universities and ask if there would be volunteer opportunities during their next summer field school.

• Participate in Indiana Archaeology Week.

Each year, numerous activities are held all over the state which allow people to visit excavations, meet archaeologists, go on archaeological laboratory tours, and have artifacts identified. Contact the Division of Historic Preservation and Archaeology about Indiana Archaeology Week held in September.

• Contact a professional archaeologist and ask questions!

Professionals are happy to explain their careers, and their science, as well as help you understand what real archaeology is all about.

• Look up information about careers, sites to visit, books to read, etc. on the World Wide Web.

Professional archaeological organizations have Web sites to visit, as do universities, private archaeology companies, and many others. There are even Web sites which offer "virtual digs."

No matter how you become involved, you will see the endless variety and uniqueness of the archaeological record in Indiana. There are many ways to participate and to help record information about our non-renewable resource of archaeological sites.

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The science of archaeology

Throughout the middle decades of the twentieth century, the practice of archaeology in North America has been influenced by new methods, techniques, and theories. An important breakthrough came in 1949 when American chemist Willard Libby discovered radiocarbon dating. Libby recognized that the age of dead plant or animal tissue could be calculated by measuring the amount of radiocarbon in the artifact, and he developed an accurate way to measure radiocarbon decay. Sites could be dated as far back as 50,000 to 100,000 years. Now, archaeologists could develop a reliable timeline of world cultures. Other methods of dating followed, including potassium-argon dating, fission track dating, obsidian hydration, archaeomagnetism, thermoluminescense, and fluorine analysis.

Today archaeologists can examine a site without disturbing the ground. In addition to aerial photography, satellite imagery is used. Global positioning systems can locate sites to within one meter. Magnetometry, gradiometry, electrical resistivity, gravity analysis, and ground penetrating radar are used to determine if an area has been disturbed by non-geologic processes.

Computers have contributed considerably to archaeological investigations. They are used to create maps of sites or regions, store data about sites, features, and artifacts, and analyze statistical information. Electron scanning microscopes and spectroscopic analyses are used to identify uses of and wear on artifacts, manufacturing techniques, raw materials, and other information.

With changes in archaeological methods and techniques came changes in theories about the very nature of archaeology. Archaeologists attending graduate schools after World War II demanded rigorous and logical research as well as reporting. They studied astronomy, geography, botany, geology, zoology, sociology, ethnology, and other science-related areas in order to expand their interpretations of cultures, cultural processes, cultural interactions, etc. They developed specialties, such as zooarchaeology, ethnobotany, underwater archaeology, rockshelter studies, industrial or urban sites, and conservation of fragile or damaged artifacts.

Archaeologists developed and applied new theoretical perspectives, including evolutionary archaeology, postprocessual archaeology, symbolic archaeology, structural archaeology, cognitive archaeology, behavioral archaeology, public archaeology, critical theory, Marxist archaeology, ecological archaeology, cultural ecology, materialism, historical archaeology, systems theory, experimental archaeology, and scientific archaeology. Each of these theoretical perspectives greatly influences how a site is investigated and interpreted.

As new discoveries and technological advances are made, archaeological studies will continue to be refined. A most important element will be the preservation of artifacts and information in museums and laboratories so that data can be restudied as new methods of discovery and analysis are developed.

Sources: Fagan, *Oxford Companion*, 703-4; Renfrew, 122; James R. Jones III, State Archaeologist.

Division of Historic Preservation and Archaeology

Archaeologists use various techniques to determine where to dig or whether to dig at all. One such test requires an electrical current to be shot into the ground at specific points and the soil resistivity measured. The results of these measurements can be used to locate features within a site and to identify the positions of those features in the subsoil. Archaeologist Mark Schurr, Notre Dame University, is demonstrating such testing at Prophetstown.

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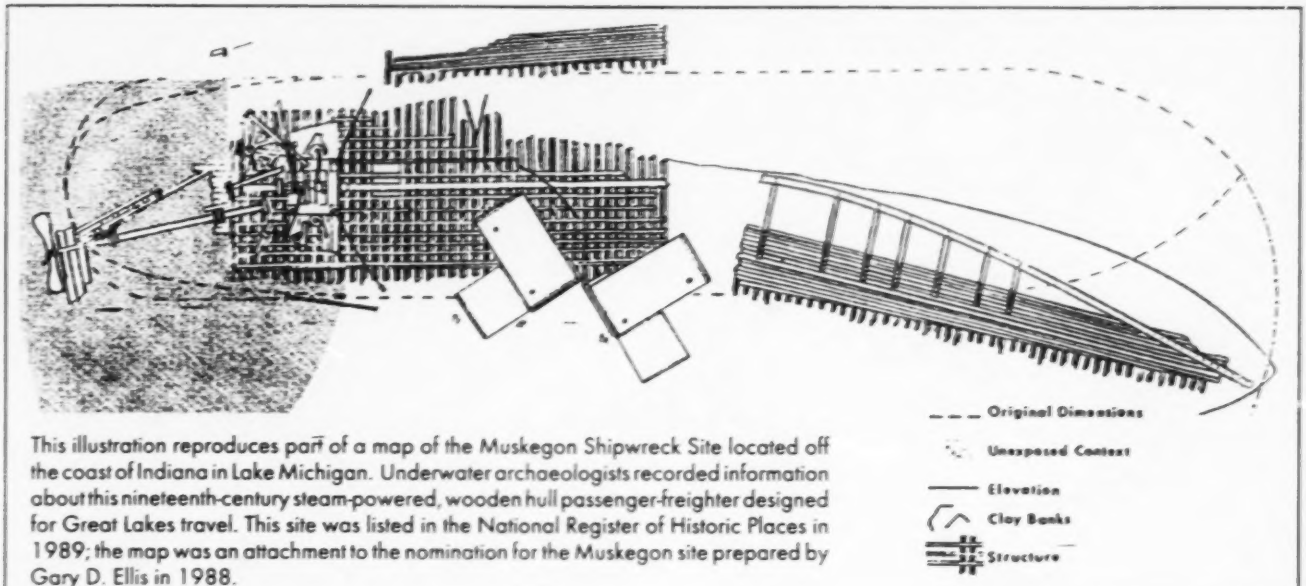
Archaeology in Indiana



This illustration reproduces part of a map of the Muskegon Shipwreck Site located off the coast of Indiana in Lake Michigan. Underwater archaeologists recorded information about this nineteenth-century steam-powered, wooden hull passenger-freighter designed for Great Lakes travel. This site was listed in the National Register of Historic Places in 1989; the map was an attachment to the nomination for the Muskegon site prepared by Gary D. Ellis in 1988.

Into the 1960s, Glenn A. Black and Eli Lilly were two of the most prominent names in Indiana archaeology. Black spent much of his career studying the Angel Site in southwestern Indiana that Lilly had purchased in 1938 and given to the state of Indiana in 1947. After Black's death in 1964, Eli Lilly working through the Indiana Historical Society and collaborating with Indiana University established the Glenn A. Black Laboratory of Archaeology. The Lilly Endowment contributed funds for the building which would house a permanent collection of artifacts and records from Black's thirty years of research.

Throughout the 1960s and 1970s Indiana universities (IU, Ball State, Indiana State, Purdue, Notre Dame) added archaeology appointments to their faculties. The number of archaeological research projects in Indiana steadily increased. Another impetus to the growth of archaeological information was federal and state legislation, particularly after 1966 with the National Historic Preservation Act. This legislation, passed by the U.S. Congress, created the National Register of Historic Places and state historic preservation officers and programs.

One requirement of this law, and subsequent legislation, was the review by archaeologists of proposed construction or building sites, for their impact on the cultural resources at those sites. In response to these laws, the Indiana General Assembly in 1971 created a state preservation program within the Indiana Department of Natural Resources. In 1977, Gary D. Ellis was the first professional archaeologist hired by the Department of Natural Resources. In 1981, the Division of Historic Preservation and Archaeology was created within the same department.

As a result of the federal and state legislation and the building boom of the 1980s and 1990s, there has been an explosion of archaeological information about Indiana. Currently, there are over 47,000 documented prehistoric and historic sites in Indiana. Common prehistoric site types include campsites, villages, mounds, chert quarries, cemeteries, artifact caches, tool manufacturing areas, food processing and gathering areas, and hunting and butchering sites.

Historical site types in Indiana include refuse heaps or dumps, old homesteads and farmsteads, forts, battlefields, cemeteries, family plots, burials, workshops, quarries, historic Indian villages, fortifications, canals, old trails and transportation routes, mills, towns, shipwrecks, and industrial and business sites.

The ages of these sites range from nearly 12,000 years ago to the twentieth century. There is still much more to learn.

Sources: Jame H. Kellar, *An Introduction to the Prehistory of Indiana* (Indianapolis, 1983); *Indiana's Cultural Resources Management Plan* 1998-2003 (Indianapolis: Indiana Department of Natural Resources Division of Historic Preservation and Archaeology, 1998); James R. Jones III, State Archaeologist.

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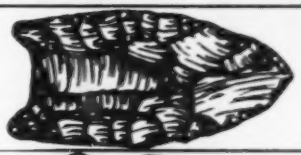
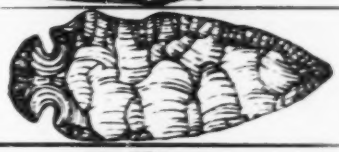
Cultural chronology of Indiana

Indiana's prehistory (the time before written records were kept) includes a variety of cultures spanning almost 12,000 years. The chart below includes (from left to right) the name and approximate age of the culture, an image of a representative artifact, and some characteristics of the culture or time period. Drawings of projectile points are by Amy Johnson and James Mohow, Division of Historic Preservation and Archaeology.

Paleoindian (ca. 10,000-7500 B.C.)		• earliest known human inhabitants of the Americas, including Indiana • lived during last glacial advance; mastodons still roamed Indiana • nomadic hunters and gatherers, lived in small bands of related people • left behind well-made stone tools including Clovis, Agate Basin, and Hi-Lo points
Early Archaic (ca. 8000-6000 B.C.)		• climate more similar to today • greater numbers of sites; rise in population • nomadic, seasonally roaming and exploiting environment • evidence of cremation mortuary practices • variety of stone tool types including grinding stones and pitted stones for food processing
Middle Archaic (ca. 6000-3500 B.C.)		• climatic warming trend • sites larger; reflect longer-term settlements • mortuary activities including human and dog burials • side notched points and grooved axes appear
Late Archaic (ca. 4000-1500 B.C.)		• more recognizable cultural groups such as French Lick, Bluegrass, Glacial Kame, Early Red Ochre, and Maple Creek • scheduled harvesting activities of animal and plant resources, early selectivity of certain plants • many site types occur including mounds • large cemeteries • tool types include woodworking and food processing implements
Terminal Late Archaic (ca.1500-700 B.C.)		• barbed or small projectile points • turkey-tail points, copper implements, and use of red ochre
Early Woodland (ca. 1000-200 B.C.)		• fired clay pottery vessels, found in broken fragments or sherds • large bladed projectile points • selection of certain plants and horticulture • sites with mound groups occur
Middle Woodland (ca. 200 B.C.-A.D. 600)		• large trade networks of more exotic goods: copper, mica, Gulf Coast marine shells • large earthworks and ceremonial sites • expanded stemmed points and blade technology • horticulture and gardening • specific design motifs for Hopewellian vessels
Late Woodland (ca. A.D. 500-1200)		• first intensive maize agriculture, hoes for agriculture • bow and arrow and the first notched and unnotched stone arrowheads • sites smaller, more scattered, fewer mounds • ceramic pots with collared or thickened rims
Mississippian (ca. A.D. 1000-1650)		• large-scale maize, beans, and squash agriculture • shell-tempered pottery • Yankeetown phase: characteristics of both Late Woodland and Mississippian • Middle Mississippian–"classic" traits of complex and ranked societies: Angel Mounds, the Vincennes Culture, the Caborn-Welborn phase • Upper Mississippian–fewer mound complexes, smaller and more dispersed: Fisher, Huber, and Fort Ancient
Protohistoric (ca. A.D. 1450-1650)		• precontact Native American groups which may have continued into the times of European exploration and settlement of Americas and written history, and/or may have been predecessors to historic tribes in the area; in Indiana there is little direct evidence of associations with historic tribes
Historic (ca. A.D. 1650-Present)	 Historic knife not to scale	• peoples with Old World and various ethnic and religious backgrounds settled in Indiana: French, British, African-American, German, Irish, Hispanic, Swiss, Baltic, Quaker, Amish are examples

Source: Jones and Johnson, 2-18. James R. Jones III, State Archaeologist

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Why and where to begin

Archaeological sites recorded in Indiana today

This map shows the numbers of archaeological sites that have currently been recorded for each county. These numbers are not necessarily indicative of the total number of sites but reflect how much work has been done in a county. For example, some counties have been subjects of large scale archaeological surveys funded by grants. Some areas are near universities with archaeology programs and have been surveyed more heavily. Other counties are coal mining locales, and state and federal laws require archaeological surveys before the mining may begin. Information changes as avocational and professional archaeologists continue to record new site information. As a result, our knowledge about Indiana's archaeological past is continually expanding.

An archaeologist always begins a research project with a question. What can a site tell about the past, past cultures, or how culture works and changes through time? He or she may need to survey or excavate a site when an area has been damaged or is in danger of being destroyed by human or natural forces. Even emergency excavations will take place under the guidance of a research question to be answered or a problem to be investigated.

Before an archaeologist begins a field or laboratory project, he or she:

- researches what is already known about the past peoples, cultures, and archaeological site being investigated,
- studies all available records (archaeology, history, geology, soils, flora and fauna, rivers, streams, water sources, and other environmental char-acteristics) about the particular cultures who inhabited specific sites and the surrounding regions,
- develops a series of research questions which may be related to how past peoples lived, adapted, or changed through time–their technology, social organization, subsistence, ecology, belief systems, economics, biological and population characteristics, art, music, dance, and other aspects of past societies and cultures,
- develops a research design focused on the study of the question or questions to be answered. The research design includes field methods and techniques to recover information in a logical, systematic way.

Research and research questions often suggest a region or certain site to investigate. Archaeologists will target areas for survey or excavations where they expect to find information relevant to their studies. Survey and excavation projects can occur all over Indiana–in cities and towns, in fields, forests, and even in rivers or lakes.

1965	1966	1966-1984	1968	1968-1969	1974	1974	1977
Glenn A. Black Laboratory of Archaeology at Indiana University is established (Glenn A. Black Laboratory Web site).	Angel Mounds placed in National Register of Historic Places, also a National Historic Landmark (DHPA files).	Ball State University excavates Van Nuys site, Henry Co.; over 3,000 Late Woodland artifacts (Glenn A. Black Laboratory Web site).	National Anthropological Archives (NAA), Smithsonian Institution, is established (National Park Service Web site).	Indiana University excavates Fort Ouiatenon site near Lafayette (Glenn A. Black Laboratory Web site).	"Terracotta army" of over 6,000 life-size model soldiers is discovered in the tomb of China's first emperor (Williams, 649).	Archaeological and Historic Preservation Act passes. Assigns oversight and coordination of U.S. public archaeology to U.S. Secretary of the Interior (National Park Service Web site).	Gary Ellis is first professional archaeologist hired by Indiana Department of Natural Resources (DHPA files).

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Phase 1

Recovery of archaeological data begins with an archaeological (or reconnaissance) level survey. The two primary goals of a Phase I survey are identification and preliminary evaluation of archaeological sites. Historical and archaeological records help archaeologists make predictions about what kinds of cultural resources may be present within their areas of investigation. They then determine what kinds of methods will be most effective for studying the site.

Fieldwork is the critical second step of any archaeological investigation. In general, Phase I archaeological fieldwork involves one or more of the following techniques: pedestrian survey, shovel probe survey, and machine sub-surface excavation. Pedestrian survey is used when twenty-five to thirty percent or more of the ground surface is bare and exposed. When the ground surface is obscured, however, archaeologists must employ the shovel probe technique. Machine excavation is used only in areas where considerable soil buildup may have deeply buried evidence of former cultural activities.

An example of a successful Phase I survey occurred in 1990. The Glenn A. Black Laboratory of Archaeology at Indiana University conducted an archaeological records check of LaGrange County, Indiana. The initial research revealed that virtually nothing was known about the archaeological history of the county! By using geological, geographical, floral, faunal and other kinds of environmental data, however, the archaeologists involved in the Phase I survey predicted that more than 20,000 archaeological sites were probably present and waiting to be identified within LaGrange County alone. The archaeologists constructed a model of where the majority of these sites might be located and what kinds of cultural resources might be found at the sites. Once the records check was complete, the archaeologists set out to test this model by gathering archaeological data in the field.

The archaeologists working on the Phase I survey of LaGrange County, Indiana used visual pedestrian surveys and numerous interviews with local residents to identify and document over fifty previously unrecorded archaeological sites. These sites represent the entire 12,000 year period of known human occupation of the region. This survey helped to lay a sound foundation for future archaeological research within the region.

Source: Mark Schurr, *An Archaeological Survey of LaGrange County, Indiana*, Indiana University, Glenn A. Black Laboratory of Archaeology Reports of Investigations, 91-2-1 (Bloomington, 1991).

Carrying out a pedestrian survey archaeologists walk in parallel lines across an area, usually no more than ten meters apart, and visually search for signs of cultural activity. When the ground surface is obscured, archaeologists must employ the shovel probe technique: archaeologists excavate small holes with a shovel, usually fifty centimeters in diameter and fifty centimeters deep, in parallel lines no more than ten meters apart.

1977	1977-1979	1979	1980	1980s	1982	1983
Council for the Conservation of Indiana Archaeology established; promotes archaeology as profession (DHPA files)	Virgil E. Noble, Jr., Michigan State University conducts excavations at Fort Ouiatenon, Tippecanoe County, Indiana (Glenn A. Black Laboratory Web site)	Archaeological Resources Protection Act (ARPA) passes. Affirms public policy of Antiquities Act of 1906 and promises to improve enforcement of resource protection (National Park Service Web site).	Warren's Shaft, vertical well that was part of Jerusalem's waterworks before King David, is rediscovered; provides access to ancient waterworks system (Williams, 710).	Underwater archaeological investigations document over 50 Indiana shipwrecks from historical data and result in the field recording of 16-17 wrecks (Jones, 1997:15).	Mary Rose, 16th century warship, sunk off Portsmouth, England, raised; contains Tudor artifacts (Mary Rose Trust Web site).	Roman Temple of Sulis Minerva in Bath, England excavated (Williams, 741).

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Phase II

A potentially important archaeological site might undergo what is known as "testing" or Phase II investigations after it has been located by a Phase I survey. An important site is one that may meet eligibility criteria for either the Indiana Register of Historic Sites and Structures or the National Register of Historic Places, or both.

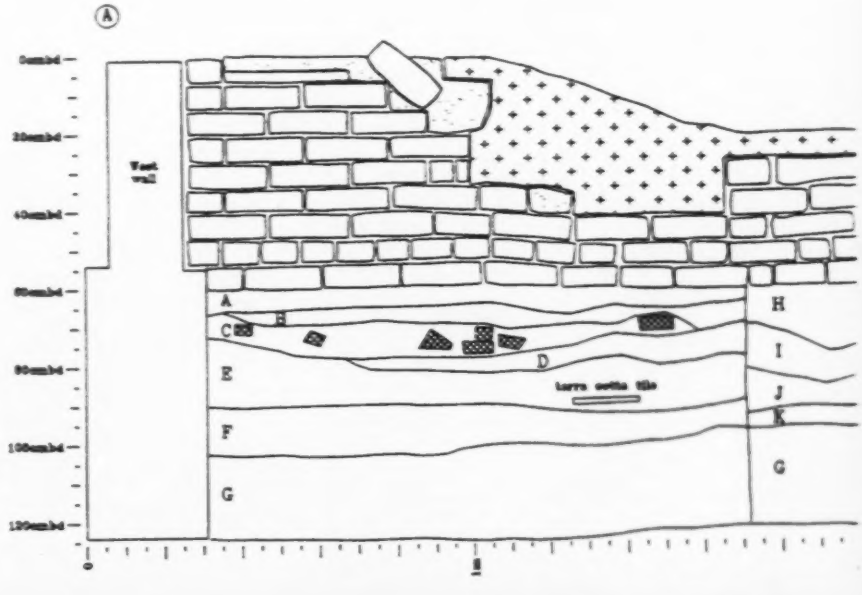
A Phase II investigation must begin with a plan, or research design. This plan must include a summary of previous investigations at the site, information regarding the cultural and physiographical background of the area, research questions to be addressed, and details of the work that will be accomplished.

The importance of a site is rarely determined without some sort of subsurface investigations. Phase II field investigations involve hand excavated test units, careful use of machinery to open up areas for investigation, and the scientific recovery of information at every level. Techniques such as remote sensing can provide non-destructive ways to recover additional information. Excavations may uncover features or deposits that the archaeologists must record. Photographs, measurements, and notes are taken, while illustrations and maps are made of everything that is discovered. All artifacts and special samples (i.e. radiocarbon samples) are collected, but information is the most important thing recovered!

Several years ago, the Rapp Granary/D.D. Owen Laboratory in New Harmony, Indiana provided the setting for a Phase II archaeological investigation. The structure was originally constructed by German craftsmen for George Rapp in 1817-1818. It later served as the laboratory of geologist David Dale Owen from 1837 until his death in 1860. The building is one of the most important sites related to New Harmony's Harmonist and Owenite periods. A recent renovation of the structure prompted archaeological testing in an attempt to "fill in the gaps" where historic records left off.

Several years of scientific test excavations by Indiana University at this site resulted in the discovery of twenty-three historic cultural features within and around the structure. The excavations also produced over 17,000 historic and prehistoric artifacts. These archaeological discoveries were studied alongside historic documents related to the structure and its use. Through this process, the archaeologists identified previously undocumented features and information about the granary, and gained dramatic insights into the structure's 180-year period of use. Part of the archaeological evidence that was uncovered has been left in place so that the public may learn more about the history of the property and the importance of the archaeological record in interpreting that history.

Source: Patrick K. O'Brien, Wendy L. Natt, Mary E. Pirkl, and Elizabeth E. Pennefather O'Brien, *Filling in the Blanks: Archaeological Investigations at the Historic Rapp Granary/D. D. Owen Laboratory in New Harmony, Posey County, Indiana*, Indiana University, Office of Cultural Resource Management, Glenn A. Black Laboratory of Archaeology Reports of Investigation, 97-05 (Bloomington, 1999).



1983-1988	1984	1985-1986	1986	1986	1986	1986
Indiana State University surveys thousands of acres in southwest Indiana and locates hundreds of prehistoric and historic sites (Stafford *et al.*, 1988).	**Remains of an 8,000 year old settlement, Ain Yam, discovered underwater off the coast of Israel** (Williams, 749).	Ball State University conducts excavations at the All Seasons site, a significant site in Miami Co. providing data on a 3,000 year period of history (Cochran and James, 1986).	Archaeologists in Egypt discover undisturbed 3,500 year old tomb of Maya, Tutankhamen's treasurer (Williams, 772).	French archaeologists report discovery of hearth in Brazilian rockshelter radiocarbon dated to about 32,000 years old–oldest archaeological site in New World (Williams, 772).	U.S. archaeologist discovers tomb of Mayan woman of high status challenging theory that Mayan women held in low esteem (Williams, 773).	Indiana University excavates Swan's Landing site, Harrison Co. This significant Early Archaic Site is listed in the National Register of Historic Places (Glenn A. Black Laboratory Web site).

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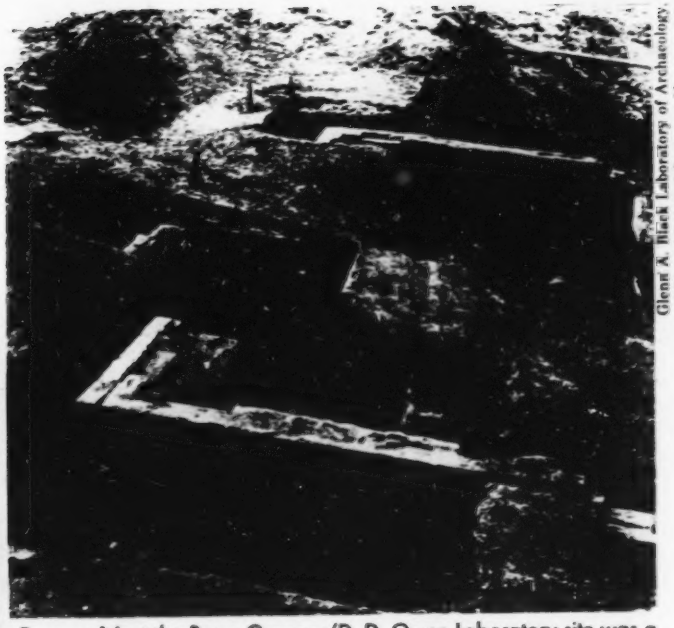
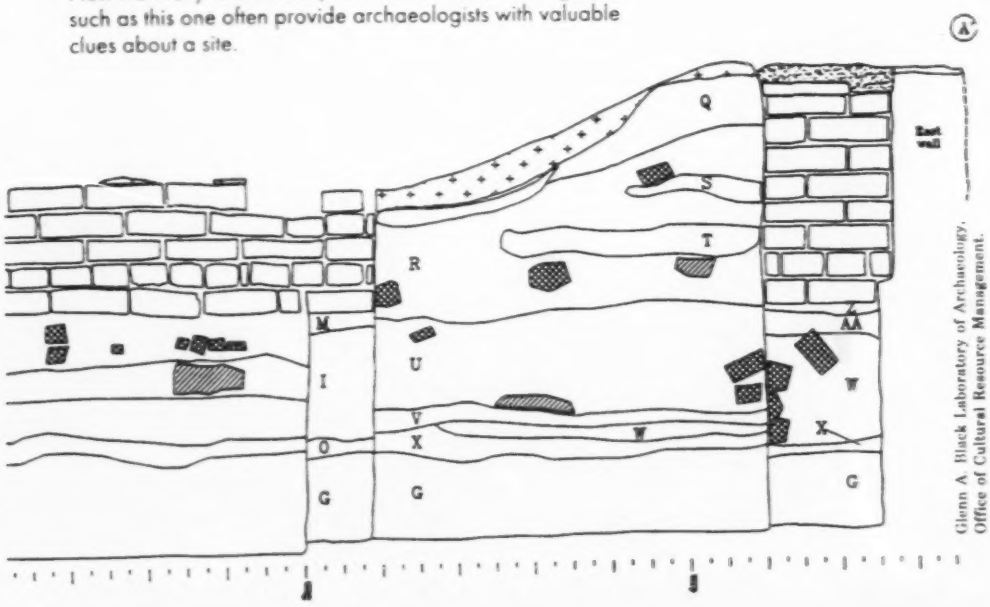
The Rapp Granary/David Dale Owen Laboratory was built in 1817-1818. It is the largest structure of its type built by German craftsmen in the U.S. or Germany. It was built with sandstone and brick with interior timber framing and a tile roof. This photograph was published in George R. Lockwood, *The New Harmony Movement* (New York, 1905). Photographs such as this one often provide archaeologists with valuable clues about a site.



Glenn A. Black Laboratory of Archaeology, Office of Cultural Resource Management.

Feature 16 at the Rapp Granary/D. D. Owen Laboratory site was a large rectangular brick wall enclosure located in front of the north granary entrance. This structure is believed to have served as an enclosure for the scales in use during the early twentieth century when the granary was used as a flour mill. The scales still exist and show a date of 1903. This feature was documented and permanently removed from the site (O'Brien, 71, 106).



Glenn A. Black Laboratory of Archaeology, Office of Cultural Resource Management.

The illustration to the left is a profile drawing of Feature 16 which is shown in the photograph above. It indicates length and depth of the feature as well as various kinds of building materials found through excavation.The capital letters on the profile indicate the variety of soil types found at this feature. This is an example of the type of information which archaeologists record.

1986	1986	1986-1987	1986-1988	1987	1987	1987
Indiana University excavates Little Pigeon Creek Cemetery, Warrick Co.; 31 burials uncovered, including a dog (Glenn A. Black Laboratory Web site).	The nature and age of prehistoric and early historic human use of caves in south-central Indiana is studied (Munson and Munson, 1990).	Indiana University excavates Mississippian house basin site, Stephan-Steinkamp, Posey Co. (Glenn A. Black Laboratory Web site).	IUPUI investigates historic aboriginal sites in Tippecanoe Co. (Jones and Trubowitz, 1987; Trubowitz, 1989).	In Wash., archaeologists find Clovis spear points from about 11500 B.C.; one of oldest occupied sites in North America (Williams, 784).	Excavations by Indiana University continue at Fort Knox II, Knox Co.; military fort occupied 1803-1813 (Glenn A. Black Laboratory Web site).	The Abandoned Shipwreck Act passes. Places management responsibility of shipwrecks with state governments (National Park Service Web site).

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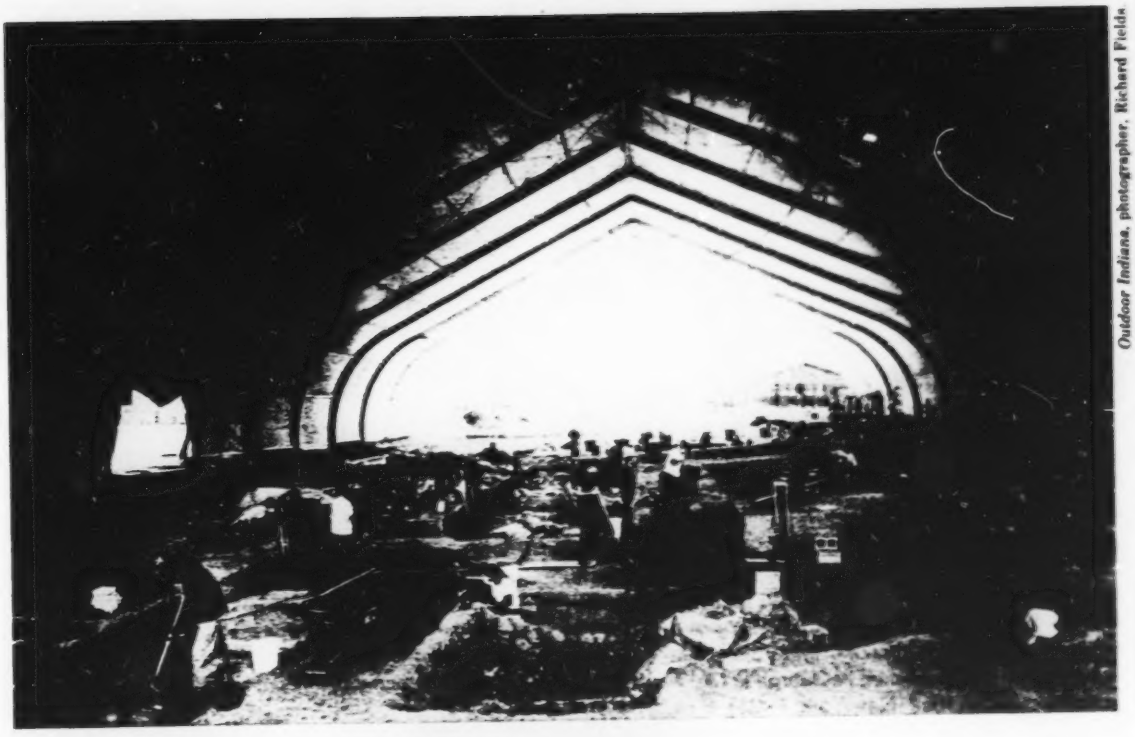
Phase III



Outdoor Indiana, photographer, Richard Fields

Division of Historic Preservation and Archaeology

Large shelters were built on a Harrison County property to protect the excavation sites and to provide work space for related activities. The article "Ancient Hoosiers" in the January/February 2000 issue of *Outdoor Indiana* contains more information and photographs about the extensive archaeological work.

In cultural resource management, data recovery is the final and most refined level of archaeological site investigation. First archaeologists must determine that a site contains significant, undisturbed cultural deposits that contain information pertinent to studying questions about the past. The next question to be answered is "Can the archaeological site be safely preserved in place for future investigation?" Often the site cannot be left undisturbed, or is endangered by development or by natural destruction. Then the only way to save even a portion of the site may be by means of systematic data recovery—the formal excavation

1987	1988	1989	1989	1990	1990-1991
The Hesher site, a Late Woodland cemetery in Henry Co., is investigated by Ball State University. (Cochran, 1988).	Archaeologists investigate one of the largest Hopewell mounds in the eastern U.S. The Mount Vernon, Posey Co. site reveals exotic and unique artifacts and is currently listed in the National Register of Historic Places (Tomak, 1990).	Indiana enacts one of U.S.'s most stringent archaeological and human burial site protection laws, now Indiana Code 14-21-1 (DHPA files).	Muskegon Shipwreck, La Porte Co., becomes 1st Indiana marine archaeological site listed in National Register of Historic Places (DHPA files).	Native American Graves Protection and Repatriation Act (NAGPRA) enacted (National Park Service Web site).	Indiana University surveys Oliver Phase occupation sites; prehistoric farming culture occupied east and west forks of White River valleys between 1000 and 1500 A.D. (Glenn A. Black Laboratory Web site).

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Outdoor Indiana, photographer, Stephen Sellers.

Outdoor Indiana, photographer, Richard Fields.

Far left: An archaeologist recovering information and artifacts at one of the sites. The hand-drawn map and artifact bags record information for further research and analysis.

Left: Principal investigator, C. Russell Stafford from Indiana State University, Terre Haute, stands in one of the excavated areas. The photograph shows various levels of excavation as well as the complex nature of the project.

of all or part of the archaeological site, to preserve a representative sample of what it has to tell us about the past.

During data recovery, archaeologists try to recover as much information as possible from the site before it is disturbed or destroyed. To do this, excavation must be very precise. A wide range of techniques is used to identify and recover information from the site. Information is uncovered in many forms, including artifacts, features, chemical evidence, and plant and animal remains. Data recovery excavation is difficult, labor intensive, and sometimes tedious work, but it is the best method for learning detailed information about the past.

In recent years, archaeological investigations for a gaming project in southern Indiana included data recovery of four prehistoric archaeological sites. The sites in Harrison County have yielded a wide range of information about prehistoric cultures in the Ohio River Valley dating from 8500 B.C. to 500 A.D. Controlled excavation of these sites has recovered more than 1,000 cultural features and millions of prehistoric artifacts. The earliest radiocarbon (carbon 14) date from one site is 9930 +/- 60 years before present.

All of the sites being excavated have yielded a wealth of unique and irreplaceable information about prehistoric cultures in the eastern United States. Like any living culture, development and change are essential to the survival of society. Archaeological data recovery allows us to preserve pieces of our past and learn more of past cultures, even as we develop and change.

1991	1992	1992-1993	1992-1993	1993	1993-1996	1995
Indiana University excavates Clampitt site, Lawrence Co.; permanent Oliver Phase village occupied during 14th century (Glenn A. Black Laboratory Web site).	Largest Bronze Age hill fort in the British Isles covering an area of 320 acres discovered in Republic of Ireland (Williams, 841).	Indiana University studies the Mann Site, one of the largest and most complex archaeological sites in the region. Other Mann Phase sites exist in southwest Indiana (Ruby, 1993).	University of Notre Dame investigates Woodland and Early Historic period settlement patterns in La Porte Co. (Schurr, 1993).	Wabash and Erie Canal Corridor in Tippecanoe Co. is surveyed for archaeological sites (Bischoff, 1994).	Indiana University excavates Cox's Woods, an Oliver Phase site (Glenn A. Black Laboratory Web site).	Indiana-Purdue University Fort Wayne conducts archaeological survey of the St. Mary's River valley-2,511 acres and 131 sites (Jeske, 1996).

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Laboratory processing, analysis, and reporting

By the end of an archaeological survey or excavation project, all of the materials recovered and data recorded are taken to an archaeological laboratory for processing. Perhaps the most important work of an archaeologist is done in the laboratory. Most researchers plan for three or four times the amount of time it took to do the fieldwork to do the laboratory work. This allows for time to process, analyze, and interpret the artifacts, data, and records recovered during the project.

The final step in any archaeological project is a written report on the investigations. Once data has been taken from the field by survey or excavation all or part of the physical record of history has been modified or destroyed. The written report may become the only record of history or prehistory for that site.

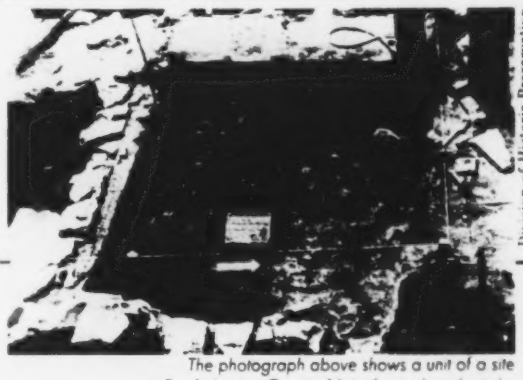
Step 1:

Cleaning and Organizing

Artifacts from each feature, level, unit, or other provenience are washed separately from those of other locations and contexts.

Artifacts are sorted by raw material:

- stone,
- bone,
- clay,
- metal,
- wood,
- shell,
- glass, etc.



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The photograph above shows a unit of a site in Bartholomew County. Note the grid marking the excavation unit and the hand tools on the right.

Step 2:

Analysis

After cleaning, artifacts are studied by:

- grid unit,
- level, and
- feature.

The archaeologist looks at each artifact and type to find out:

- how many were found?
- which ones are most common?
- what were they used for?
- what changes occur through time?
- what kind of past behavior do they reflect?

Step 3:

Written Report

The written report begins with an introduction that describes:

- the nature of the project,
- why it was conducted,
- who did the project,
- where, when, and what questions were being investigated, and
- what was expected to be found.

The report includes:

- a detailed description of the research design and questions,
- a description of the natural and environmental characteristics of the area,
- a description of the background research on the site,
- an explanation of all field and lab techniques used,

Step 4:

Preservation

Artifacts and records from a site are preserved at a lab, museum, or other public institution for further study.

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Projectile points from the Late Archaic Period

1995	1995-2000	1996	1997	1997	1997-1998
Purdue University conducts an archaeological survey of 1,365 acres in White Co. (Helmkamp, 1996).	Indiana State University excavates remarkable Kirk tradition site in Harrison Co. Hundreds of thousands of artifacts recovered (Stafford, 2000).	Governor Evan Bayh issues proclamation, establishing state's 1st Indiana Archaeology Week, celebrating science of archaeology (DHPA files).	Indiana Department of Natural Resources publishes professional archaeological journal, *Indiana Archaeology* (DHPA files).	Archaeological investigations by Ball State University expand knowledge of African-American and Quaker farms in East Central Indiana (Rotman et al., 1998).	Investigations by Ball State University and Hoosier National Forest archaeologists provide new information about rockshelter utilization during the prehistoric period (Waters and Cochran, 1999).

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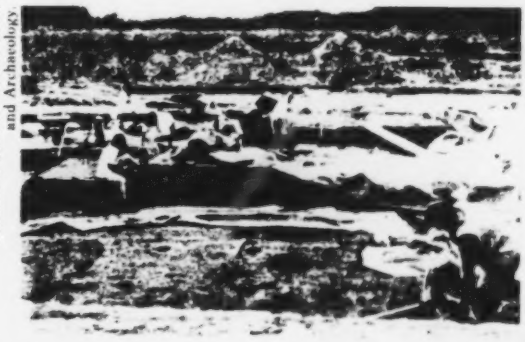

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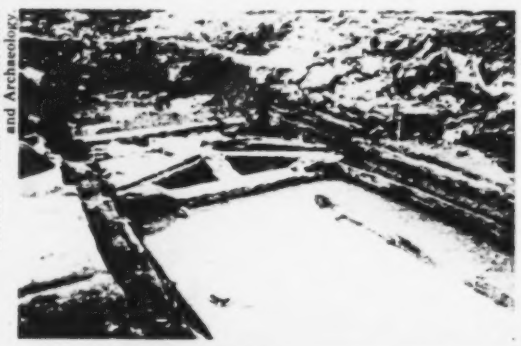


Division of Historic Preservation and Archaeology

Far left: Archaeologists excavate a large site. Note post mold features in foreground.

Left: Excavation at this site revealed a lock on the Wabash and Erie Canal.

Materials are:
- identified,
- divided into classes of artifacts such as projectile points, axes, scrapers, grinding stones, awls, beads, nails, etc.

Artifacts are:
- counted,
- weighed,
- measured,
- recorded,
- numbered according to site, type, provenience,
- entered into computer databases.

Outdoor Indiana, photographer, Richard Fields

Workers cleaning and analyzing artifacts in a field laboratory at a major archaeological site.

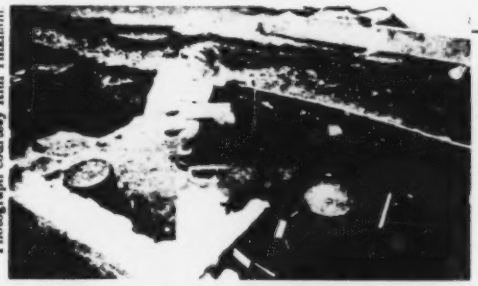
Sometimes specialized analyses are conducted, such as:
- flotation,
- carbon dating,
- chemical, mathematical, and statistical analyses.

Lab work also includes:
- drafting, redrawing, and labelling site maps, profiles, locations of grids, units, features, etc.

- a list and analysis of all data and artifacts recovered,
- written and visual descriptions of all areas surveyed and excavated,
- the condition of the site,
- statement on the curation of the artifacts and records,
- interpretation of the findings and significance of the site.

Every report should also include:
- a detailed bibliography,
- photographs and maps depicting the site,
- the grids, the areas, and units investigated, etc.

Materials may be:
- exhibited to the public,
- used in educational displays, and
- made available for people to see and "experience" the past.



Photograph courtesy Kim Tinkham

Mapping a unit wall profile at Lanier State Historic Site in Madison, Indiana.

U.S.D.A. Forest Service, Hoosier National Forest.

A rockshelter surveyed by Ball State University students and the Hoosier National Forest staff during 1998.

Rockshelters

As unique and dynamic geological formations, Indiana rockshelters have long been recognized as potentially important sources of archaeological information. Rockshelters often provide clues about how people used floral and faunal resources through time, and what many of their daily activities were like. Data obtained from rockshelter sites can also help modern investigators construct models of past climate and environment.

Only within the past few years, however, has the systematic investigation of these fascinating locales moved forward. Recent research, including investigations by Ball State University in cooperation with the Hoosier National Forest, has resulted in the identification and study of over 100 previously unrecorded rockshelter sites in Indiana. Rockshelter research projects continue to play a critical role in the investigation and management of Indiana's irreplaceable archaeological heritage.

1998	1998	1998-1999	1999-2000	2000	2000
British archaeologist reports that radar surveys of Angkor, Cambodia, reveal temple remains from 8th-13th centuries A.D., much older than previous ruins found there (Williams, 935).	Israeli archaeologists report discovery of oldest ruins of Jewish synagogue from around 70 A.D. near Jericho in the West Bank (Williams, 935).	University of Notre Dame studies prehistoric mounds in northwest Indiana (Schurr, 1999).	Cemetery and graves protection legislation is strengthened by Indiana General Assembly. Plans made for statewide database of cemeteries (DHPA files).	Indiana has over 47,000 recorded archaeological sites. Division of Historic Preservation and Archaeology maintains a database of the sites (DHPA Web site).	Wildfires at Mesa Verde National Park in Colorado endanger numerous archaeological sites. Archaeologists perform emergency archaeology to recover information (Scripps Howard News Service).

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Indiana Department of Natural Resources

Division of Historic Preservation and Archaeology

Young students participate in a mock excavation learning methods and values of archaeology. Public support of archaeological research and protection of sites and information is critical to the future of archaeology and to the preservation of our past. Opportunities are growing in Indiana for public participation in archaeology. Events like Archaeology Week provide educational sessions, demonstrations, hands-on activities, artifact identifications, and excavation experiences. Avocational archaeology groups throughout the state provide additional ways to learn about Indiana's past and to help preserve it for future generations.

Division of Historic Preservation and Archaeology

The Archaeology Section of the Division of Historic Preservation and Archaeology (DHPA) conducts the state program for protecting and preserving Indiana's precontact (prehistoric) and historic archaeological sites. Notable duties of the section include:

- conducting reviews and commenting on effects of thousands of federal and state projects on archaeological resources;
- issuing archaeological permits and conducting investigations according to Indiana Historic Preservation and Archaeology law (IC 14-21-1);
- providing training in and educational materials about archaeology in Indiana; coordinating Archaeology Week activities;
- serving the Native American Council which provides a public forum for discussion of the relationships of Native American issues and state policies and procedures;
- maintaining archaeological records and database; creating and maintaining a cemetery and burial grounds registry;
- providing technical assistance to the public and to professionals;
- administering a grants program to fund archaeological survey and test excavation projects.

The Indiana Historic Preservation and Archaeology Law (IC 14-21-1) protects and preserves archaeological and burial sites in the state. It is one of the strongest laws in the nation and it

- requires approved plans or permits to conduct archaeological excavations;
- protects from disturbance in-ground artifacts dating before December 11, 1816 and human remains dating before 1940;
- protects archaeological sites on state properties and sites on all ground in Indiana;
- encourages amateur archaeologists to establish and maintain a code of ethics.

Within the past two years, two laws have been passed which require additional protection for Indiana cemeteries and burial grounds. Indiana Code 14-21-2

- protects grave memorials from being removed from a cemetery, except under certain circumstances;
- prohibits the buying and selling of grave memorials and other items that have been removed from a cemetery.

Recent additions to IC 14-21-1

- authorize the DHPA to create a registry of cemeteries and burial grounds;
- require development plans involving ground within 100 feet of a cemetery to be submitted for approval;
- require burial grounds or cemeteries to be recorded in the county recorder's office, with a copysent to the Department of Natural Resources.

Currently, archaeology in Indiana is a lively and viable discipline contributing much to the understanding and enrichment of our lives. The future of archaeology in Indiana and elsewhere is tied not only to new scientific and technological achievements but also to increased public awareness and support of legal protections for our cultural sites and ethical standards for all participants.

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A Note Regarding Resources: items are listed on this page that enhance work with the topic discussed. Some older items, especially, may include dated practices and ideas that are no longer generally accepted. Resources reflecting current practices are noted whenever possible.

Selected Resources

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Additional resources

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Workbook and CD-ROM allows reader to learn basics of a dig. Uses real data based on excavations.

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Resources for educators

• Indiana Humanities Council. Humanities To Go Video and Lending Library.

Two kits relate directly to Indiana—*Archaeology and the All Seasons Site* and *Exploring Ancient Cities: Teotihuacan and Angel Mounds.*

• Smith, KC, and Francis P. McManamon, eds. *Archaeology and Education: the Classroom and Beyond.* U.S. Department of the Interior, National Park Service. Archeological Assistance Study Number 2. Washington, D.C., October 1991.

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Selected student resources

• Avi-Yonah, Michael. *Dig This! How Archaeologists Uncover Our Past.* Minneapolis, 1993.

Includes methods, pioneers, and general history. Color photographs, index, glossary, and pronunciation glossary; intermediate students.

• Cork, Barbara, and Struan Reid. *Archaeology.* Tulsa, Okla., 1991.

Excellent overview. Part of the Usborne Young Scientist series.

• Duke, Kate. *Archaeologists Dig for Clues.* New York, 1997.

For readers ages 5-9.

• Finney, Susan, and Patricia Kindle. *American Indians: Pueblo to Potlatch, Totems to Tepees.* Parsippany, N.J., 1985.

An independent learning unit for grades 4-8.

• Hackwell, W. John. *Diving to the Past: Recovering Ancient Wrecks.* New York, 1988.

Explores marine archaeology; intermediate students.

• McIntosh, Jane. *Archeology.* New York, 1994.

Limited text but spectacular photographs; all students; Eyewitness Books series.

• Porell, Bruce. *Digging the Past: Archaeology in Your Own Backyard.* Reading, Mass., 1979.

Stories, activities, and games; intermediate students.

• Sterling, Mary Ellen. *Archaeology.* Huntington Beach, Calif., 1994.

A thematic unit at the "challenging" level.

• *Stones and Bones! How Archaeologists Trace Human Origins.* Minneapolis, 1994.

Describes how early humans may have lived and are studied; intermediate students.

• *Woodland Peoples: An Educational Unit.* Minnetrista Cultural Center. Muncie, Ind., 1993.

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These mounds. . .

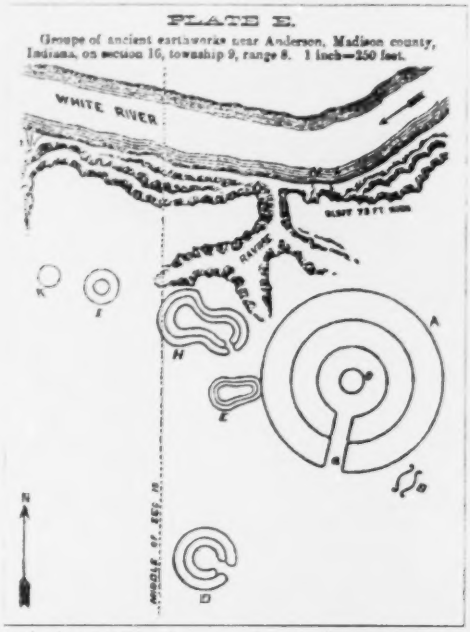
In his 1874 book, *History of Madison County*, Samuel Harden writes of what was to become Mounds State Park: ". . . These mounds are annually visited by pleasure seekers from different parts of the state. Many picnics and celebrations are held here . . . . The query naturally comes up, When and by whom were these mounds built? The author does not propose answering either of these. One thing, however, is apparent: it has been many hundred years since this vast work was done . . . ."

Just like Harden, we are fascinated by these mounds and earthworks and the questions they raise. Fortunately, through the science of archaeology, we have learned much about the prehistoric peoples of Indiana.

Today we can visit two remarkable sites which provide insight into the lives of the builders. Mounds State Park, Anderson, is an Adena-Hopewell site which contains unique mounds and earthworks. The largest mound dates to circa 160 B.C. This complex and well-organized society had a trade system that reached as far as the Gulf of Mexico!

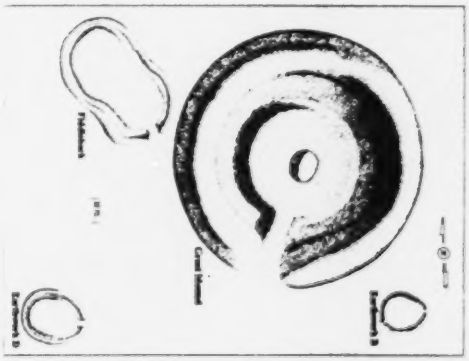
Angel Mounds, Evansville, is a Mississippian site which dates to 1100 A.D. This was a complex agricultural society. As the political, religious, and economic center, it was the largest settlement of its time in Indiana, with thousands of residents.

Extensive excavation and research has been done on these incredible mounds and the mysterious peoples who lived there. To learn more, visit soon and be informed and fascinated. Both sites are listed in the National Register of Historic Places. Angel Mounds is a National Historic Landmark as well.



In the late 1870s, the mounds at Anderson, Indiana were described as "By far the most unique and well preserved in this State . . . ." The map above, drawn in the 1870s, shows the location, orientation, and relative size of the mounds.

Source: E. T. Cox, Eighth, Ninth and Tenth Annual Reports of the Geological Survey of Indiana . . . 1876-77-78 (Indianapolis, 1879), 129, 131.



The Mounds at Anderson have been protected since 1930 as an Indiana State Park. The earthworks at Mounds State Park have been the subject of professional archaeological investigations since the late 1960s. Ball State University archaeologists have conducted surveys and excavations since the 1970s uncovering much new information about how the mounds were made, the dates of construction, and the unique artifacts found there.

The map is adapted from: Beth Kolbe, *1988 Excavations at Mounds State Park*, Ball State University, Archaeological Resources Management Service Reports of Investigation, 34 (Muncie, 1992).

Angel Mounds State Historic Site

8215 Pollack Avenue
Evansville, Indiana 47715
HTTP://WWW.STATE.IN.US/ISM/SITES/ANGELMOUNDS/

Mounds State Park

4306 Mounds Road
Anderson, Indiana 46017
HTTP://WWW.STATE.IN.US/DNR/PARKLAKE/PARKS/MOUNDS.HTML